

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number  
**WO 2003/034925 A3**

(51) International Patent Classification<sup>7</sup>: **A61B 17/064**

(21) International Application Number:  
PCT/US2002/033984

(22) International Filing Date: 22 October 2002 (22.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/347,846 23 October 2001 (23.10.2001) US

(71) Applicant (for all designated States except US): **TYCO  
HEALTHCARE GROUP LP** [US/US]; 150 Glover Av-  
enue, Norwalk, CT 06850 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KAYAN, Helmut**  
[US/US]; 222 Scenic Drive, Redwood City, CA 94062  
(US).

(74) Agents: **AUDET, Paul, R. et al.**; Tyco Healthcare Group  
LP, 150 Glover Avenue, Norwalk, CT 06850 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,  
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

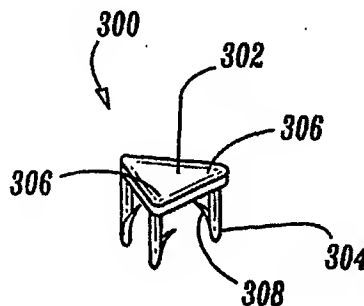
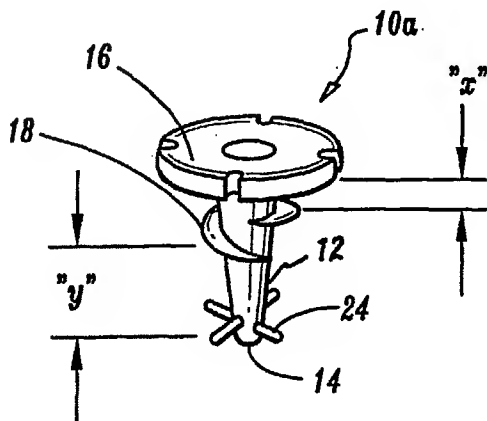
Published:

— with international search report

(88) Date of publication of the international search report:  
26 February 2004

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **SURGICAL FASTENERS**



(57) Abstract: Surgical fasteners, including tasks are disclosed for fastening a surgical mesh to underlying tissue during surgical procedures to repair body tissue, such as in hernia repair. Such tacks can include a head (16), a elongated body portion (12) having a distal end and a proximal end (14), and an anchoring element (24) on an outer surface of the body portion for inhibiting the removal of the tack from the mesh and body tissue.

WO 2003/034925 A3

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/33984

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B17/064

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 971 985 A (CARCHIDI JOSEPH E ET AL) 26 October 1999 (1999-10-26)  column 2, line 23 -column 3, line 10; figure 1	1-8, 10-12, 21,25
X	EP 1 025 803 A (ARTHREX INC) 9 August 2000 (2000-08-09) figures 1-3	1-5,8, 11,25
X	US 5 720 766 A (SKIBA JEFFRY ET AL) 24 February 1998 (1998-02-24)  figures 3,4,7-9,12,13	1,2,5,8, 11-13, 21,25
X	WO 96 06565 A (RUFF GREGORY L) 7 March 1996 (1996-03-07) page 11, paragraph 2; figures 6,7	1,17-25
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

27 March 2003

Date of mailing of the international search report

11.04.03

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Hamann, J

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 02/33984

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 984 927 A (WENSTROM JR RICHARD F ET AL) 16 November 1999 (1999-11-16) column 3, line 20 - line 35 ---	1,17,18, 21,25
X	WO 01 56533 A (DEMOPULOS GREGORY A ;THATCHER G LAWRENCE (US); ADAMS LELAND R (US)) 9 August 2001 (2001-08-09) figure 9 ---	1,17,18, 21,25
X	US 5 203 864 A (PHILLIPS EDWARD H) 20 April 1993 (1993-04-20) figures 1-6 ---	1,21,22, 25
X	WO 00 30552 A (BIOCOMPOSITES LIMITED ;BRATT JOHN STEPHEN (GB); COOPER JOHN JOSEPH) 2 June 2000 (2000-06-02) page 5, paragraph 2; figure 12 ---	1,21,25
A		8,9,23, 24
X	WO 01 37741 A (WOISETSCHLAEGER RUDOLF) 31 May 2001 (2001-05-31) the whole document ---	1,21, 25-28,31
X	US 4 994 073 A (GREEN DAVID T) 19 February 1991 (1991-02-19)  the whole document ---	1,21,22, 25-29, 31,35
X	US 4 454 875 A (PRATT CLYDE R ET AL) 19 June 1984 (1984-06-19)  the whole document ---	1,21,22, 25-29, 31,35
X	US 5 478 354 A (SHIKHMAN OLEG ET AL) 26 December 1995 (1995-12-26)  figures 12-15 ---	1,21, 25-28, 31-34
A	US 6 277 130 B1 (SHADDUCK JOHN H) 21 August 2001 (2001-08-21) figures 7-9 -----	6,7,10, 30

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/33984

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5971985	A	26-10-1999	NONE	
EP 1025803	A	09-08-2000	US 6319270 B1 EP 1025803 A1 US 2002022862 A1 US 2002032466 A1	20-11-2001 09-08-2000 21-02-2002 14-03-2002
US 5720766	A	24-02-1998	US 5522843 A AT 204439 T AU 695095 B2 AU 1932695 A DE 69522317 D1 DE 69522317 T2 EP 0746238 A1 JP 3024799 B2 JP 9507651 T KR 196056 B1 NZ 282268 A CA 2183984 A1 WO 9522930 A1	04-06-1996 15-09-2001 06-08-1998 11-09-1995 27-09-2001 08-05-2002 11-12-1996 21-03-2000 05-08-1997 15-06-1999 26-06-1998 31-08-1995 31-08-1995
WO 9606565	A	07-03-1996	US 5342376 A WO 9606565 A1 EP 0783268 A1 JP 10511009 T	30-08-1994 07-03-1996 16-07-1997 27-10-1998
US 5984927	A	16-11-1999	WO 9944525 A1	10-09-1999
WO 0156533	A	09-08-2001	EP 1257205 A2 WO 0156533 A2 US 2002169477 A1	20-11-2002 09-08-2001 14-11-2002
US 5203864	A	20-04-1993	US 5290296 A US 5376097 A US 5290297 A	01-03-1994 27-12-1994 01-03-1994
WO 0030552	A	02-06-2000	AT 224167 T AU 1062400 A DE 69903062 D1 DE 69903062 T2 EP 1133262 A1 GB 2363990 A WO 0030552 A1	15-10-2002 13-06-2000 24-10-2002 23-01-2003 19-09-2001 16-01-2002 02-06-2000
WO 0137741	A	31-05-2001	AT 407952 B AT 197499 A WO 0137741 A1 AU 1974901 A	25-07-2001 15-12-2000 31-05-2001 04-06-2001
US 4994073	A	19-02-1991	CA 2010613 A1 DE 69019213 D1 DE 69019213 T2 EP 0389102 A1 EP 0548998 A1	22-08-1990 14-06-1995 26-10-1995 26-09-1990 30-06-1993
US 4454875	A	19-06-1984	CA 1180965 A1 DE 3310833 A1 FR 2525102 A1	15-01-1985 27-10-1983 21-10-1983

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-25

A tack according to claim 1 with a specific design of the anchoring element

1.1. Claims: 1-16,25

A tack according to claim 1, wherein the anchoring element is a helical thread

1.2. Claims: 1,17-20

A tack according to claim 1, wherein the anchoring element is at least one resilient prong

1.3. Claims: 1,21-24

A tack according to claim 1, wherein the anchoring element includes at least one barb

2. Claims: 26-35

A tack according to claim 1 comprising at least two legs

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/33984

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/33984

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4454875	A	GB 2118662 A ,B	02-11-1983
		GB 2154688 A ,B	11-09-1985
		JP 1376151 C	22-04-1987
		JP 58188442 A	02-11-1983
		JP 61040418 B	09-09-1986
US 5478354	A	26-12-1995	NONE
US 6277130	B1	21-08-2001	AU 2103301 A
		WO 0143646 A1	25-06-2001
			21-06-2001